

REMARKS/ARGUMENTS

In the response to the Final Office Action dated June 17, 2003, among other points, it was argued that claims 1 and 12 call for laying the polyimide film on a wafer and then partial curing of the polyimide film.

In the Advisory Action dated September 29, 2003, it was stated that Umehara teaches the “laying” step in that it teaches bonding a polyimide layer to a wafer by thermocompression.

In order to set out the invention more specifically, claims 1 and 12 have been amended, and now call for preheating the semiconductor wafer and the polyimide film “without applying any external pressure” when partially curing the polyimide film.

As recognized by the Examiner, Umehara teaches that the wafer is bonded to the polyimide adhesive layer 4 through thermocompression. The reason for applying pressure while heating the wafer (thermocompression) is to achieve a relatively strong bond strength between the wafer and the polyimide adhesive layer 4. Specifically, Umehara states that the wafer is bonded to the polyimide adhesive layer 4 to a bonding strength of at least “100g/25mm” and preferably to at least “400g/25mm”. Col. 6, lines 53-55.

Compression is a necessary step for achieving the bond strength that Umehara requires. Bond strength is a necessary part of Umehara’s invention. Otherwise, the chip/polyimide units (see Fig. 5) in the last step of the assembly may be damaged, thereby rendering the process ineffective. Specifically, if the bond strength between the chip and the polyimide adhesive 4 is not strong enough to overcome the adhesion between the polyimide 4 and processing film 3, the polyimide adhesive 4 may peel off of the chip when it is picked up to be assembled onto the lead frame in the last step. Umehara ensures that the chip/polyimide units do not fail by first making sure that the adhesion between the processing film 3 and the polyimide adhesive 4 is lower than the bond strength between the chip and the polyimide adhesive 4. Specifically, Umehara teaches that the surface tension of the processing film 3 should be below 30-40 dyn/cm. “The employment of the surface tension of 30 to 40 dyn/cm ensures excellent transferability of the polyimide adhesive layer 4 from the processing film for polyimide type resin 3”. Col. 4, lines 59-63. Thus, Umehara teaches a process by which adhesion between the polyimide adhesive layer 4 and the wafer is made comparatively higher than the adhesion between polyimide adhesive layer

4 and processing film 3 so that the chip/polyimide adhesive 4 can be transferred easier. Thus, compression is an important part of the process disclosed by Umehara.

On the other hand, a process according to either claim 1 or claim 12 does not require any external pressure, thereby eliminating a required step from the process taught by Umehara. It is respectfully submitted, therefore, that claims 1 and 12 should be deemed allowable over the cited art. Reconsideration is requested.

Each of claims 2 and 5-11 depends from claim 1, and, therefore, includes its limitations. Each of these claims further includes additional limitations which in combination with those of claim 1 are not shown or suggested by the art of record. Reconsideration is requested.

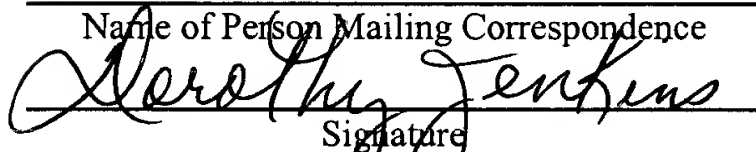
The application is believed to be in condition for allowance. Such action is earnestly solicited.

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Signature

November 12, 2003

Date of Signature

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Respectfully submitted,



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